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FOREIGN CROPS AND MARKETS

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FEATURE OF ISSUE; The Brazilian Cotton Industry

CROP PROSPECTS

SMALL GRAINS

Grain crops in Canada are making rapid growth as a result of recent warm weather and the ample supply of moisture. The official report from Saskatchewan states the good rains early in the month have improved crop conditions.

Conditions in Europe remain unchanged from the generally favorable conditions previously reported except for some deterioration due to drought in Hungary. On June 1, however, conditions of cereals in Hungary were officially reported as above average so unless the drought has been very severe there may yet be an average harvest. The yield of the cereal crops in Greece this year is expected to be considerably larger than last.

The first production report of the season from North Africa containing a forecast of crop production in Tunis has just been received from the International Institute of Agriculture at Rome. Wheat production is forecast at 8,671,000 bushels against 6,181,000 bushels in 1924 and 9,921,000 in 1923. The barley crop is forecast at 6,889,000 bushels compared with 2,526,000 bushels produced in 1924 and 11,482,000 bushels from the 1923 harvest. Should these forecasts be borne out by the final yields there should be some surplus available for export. Crop production in Tunis is too small to permit of any considerable exports even in good crop years. However, as most of the grain exported is sent to France, Tunisian exports are of some importance as they affect the French imports from other countries. Roughly estimating domestic requirements of wheat at 7,500,000 bushels and barley at 4,600,000 bushels and making no allowance for carryover, there should be available for export from the current crop somewhat more than 1,000,000 bushels of wheat and over 2,000,000 bushels of barley.

CROP PROSPECTS CONTINUED

In Morocco conditions below average in the south are offset by good crops in the north so that on the whole about an average harvest is indicated. Conditions in Algeria continue favorable.

CEREAL CROPS 1923-24 AND 1924-25

COUNTRIES	1923-24	1924-25	Decrease from 1923-24	Increase over 1923-24
AREA	1,000 acres	1,000 acres	Percent	Percent
WHEAT:				
Total 17 countries	140,147	140,434		.2
Czechoslovakia....	1,500	1,510		.7
Bulgaria..........	2,462	2,511		2.0
Algeria...........	3,492	3,407	2.4	
Tunis.............	1,108	1,433		29.3
Total 21 countries.	148,709	149,295		.4
Estimated world total excluding Russia.........	217,800			
RYE:				
Total 14 countries	24,185	25,442		5.2
Czechoslovakia....	2,073	2,076		.1
Bulgaria..........	414	422		1.9
Finland...........	573	581		1.4
Total 17 countries.	27,245	28,521		4.7
Estimated world total excluding Russia........	42,900			
BARLEY:				
Total 12 countries	24,404	25,007		2.5
Algeria...........	3,158	3,105	1.7	
Tunis.............	692	1,112		60.7
Total 14 countries.	28,254	29,224		3.4
PRODUCTION				
	1,000 bu.	1,000 bu.	Percent	Percent
WHEAT:				
Total 4 countries.	1,297,376	1,074,829	17.2	
Tunis..............	5,181	8,671		67.4
Total above countries	1,302,557	1,083,500	16.8	
Estimated world total excluding Russia.......	3,118,000			
RYE:				
Total 3 countries..	211,743	301,237		42.3

CROP PROSPECTS CONT.

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SUGAR

No changes have been reported in the sugar situation since last week when the European acreage for this year was expected to equal that of last year, and conditions of the cane fields in cane sugar producing countries were mostly favorable.

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COTTON

The cotton situation remains practically unchanged with conditions in most countries favorable. Private reports for Egypt state that the crop continues to progress favorably.

In Northern Nigeria 24,000 bales have been brought this year from native growers by the British Cotton Growing Association, states the Manchester Guardian Commercial of May 23, 1925. The above figure does not include that part of the crop shipped across the French frontier which is estimated at 4,000 bales, nor the amount used for local consumption. This indicates a big increase over the production for the year 1923-24 when the total crop was estimated at 15,800 bales of 478 pounds.

The crop for Ecuador this year should exceed that of 1924 which was a comparative failure, states Consul Butrick at Guayaquil. Early plantings have been damaged by the rains.

Revised production estimates have been reported to the International Institute of Agriculture for Algeria and Chosen. The Algerian 1924-25 crop is now estimated at 2,200 bales of 478 pounds compared with the previous estimate of 1,400 bales and the crop of Chosen is now placed at 121,000 bales compared with 119,600 bales previously reported. The crop in St. Vincent is estimated at 1,100 bales compared with the 1923-24 crop of 1,200 bales.

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NEW IRRIGATION FOR ANGLO-EGYPTIAN SUDAN.

The Blue Nile dam at Makwar was completed on May 8, 1925 some seven weeks in advance of the contract time, according to Consular Clerk Nutting at London, 300,000 acres of the Gezira plain between the Blue and White Niles will be open to irrigation for cotton.

The irrigation canals will be finished by July 1. The Sudanese will start their cotton farms forthwith. More than 100,000 bales of cotton will probably be grown in the Gezira this year, a plain, for the most part composed of rich, black soil, well suited for cotton growing. Experts in the Sudan state that the cotton will be better than the finest Egyptian Sakellaridis.

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CROP PROSPECTS CONT'D.

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FRUIT.

The poor outlook previously reported for Czechoslovakia, Austria and the Italian Tyrol extends to Switzerland where the condition of the apple crop is reported to be only 72 percent of the average condition for the past ten years, pears 42 percent and plums 65 percent according to a cable to the Department from Agricultural Commissioner G. C. Haas. For England and Wales the Ministry of Agriculture and Fisheries reports the table and cooking apples, and plums to be setting well, but cherries and pears not quite so well.

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OILSEEDS

A heavy crop of peanuts is reported in Nigeria for 1924-25 according to the British Annual Colonial report for that colony.

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MARKET NEWS AND PROSPECTS

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LONDON BUTTER MARKET CONTINUES FIRM.- Butter prices in London on June 19 were somewhat more than maintained on all descriptions as compared with a week earlier, thus continuing the steady strengthening of the market during recent weeks at the same time that considerable stocks are being accumulated in cold storage. Danish in London was quoted at 41.6 cents, which was less than half a cent below 92 score in New York, with New Zealand salted at 39.3 and unsalted at 40.9 cents. A detailed statement of prices as cabled by the American Agricultural Commissioner in London appears on page 778.

STRONGER BRITISH PORK MARKET.- Prices of bacon from all sources in British markets showed slight upward tendencies during May as the result of lighter receipts. Total imports of bacon were 17,000,000 pounds below those of April, according to cabled reports from Edward A. Foley, American Agricultural Commissioner at London. While receipts from all sources were lower than for the preceding month the greatest percentage of loss occurred in imports from the United States. Hams also fell off sharply. Receipts of lard, however, increased. For the week ending June 10, bacon prices continued to exhibit an upward tendency, especially Danish and Canadian, the latter rising nearly 30¢ per hundred pounds. American Wiltshire sides were fairly steady at $21.68 a hundred pounds. Receipts of bacon from Denmark continued erratic as a result of strike conditions, rising to 11,000,000 pounds against about 4,000,000 pounds for the preceding week. Purchases of hogs in Ireland continued downward, reaching 16,000 for the week against 17,000 for the preceding week. Details appear on page 778.

MARKET NEWS AND PROSPECTS, CONT'D.

UPWARD TENDENCY IN GERMAN PORK MARKET.- For the weeks ending June 10 and 17 prices in German pork markets have shown a decided upward tendency with lard at Hamburg rising nearly $1.00 per hundred pounds, according to W. A. Schoenfeld, Berlin representative of the Department of Agriculture. Hog prices were higher than for any week since the beginning of the year, and lard reached the highest point since the middle of March. Receipts of hogs at 14 markets were relatively steady. Details appear on page 778.

FRANCE BARS BORAXED MEATS.- A ministerial decree of June 12, 1925, prohibits the entry into France of borax cured meat after July 15, according to a cable from W. W. Corcoran, American Vice Consul at Boulogne-sur-mer, France. This decree will materially affect the trade of the United States with France in preserved meats, since the borax process is used extensively by American packers.

MORE PORK FOR FRANCE VIA GREAT BRITAIN.- The recent depreciation of the franc has tended to direct larger volumes of the pork trade to Great Britain and away from the United States, according to W. W. Corcoran, American Vice Consul at Boulogne-sur-mer. It is said that considerable quantities of American pork products are secured via Great Britain, the favorable terms offered by British dealers outweighing the more desirable practice of direct imports from the United States.

ADULTERATED WOOL FROM ALEPPO.- From 1 to 9 per cent of so-called "dead" wool is included in nearly all sales to buyers in the United States, according to N.W. Altaffer, American Vice Consul at Aleppo, Syria. The high percentage is the result of the heavy mortality among Syrian sheep during the winter just passed. Dealers are said to be unwilling to grade "dead" wool as such, since that would involve receiving a lower price.

COOPERATIVES TO HANDLE MEXICAN SISAL.- After June 1 sales of sisal at Progreso, Mexico, will be conducted by the new cooperative organizations, according to a cable from H. C. Vogenitz, American Consul at that port. May shipments reached 73,798 bales of which 68,075 went to the United States. Stocks on June 1 were 16,336 bales. Planters were receiving 6-3/4 cents per pound f.o.b. wharves, American companies paying 8.5 cents.

CALAIS DISTRICT WANTS AMERICAN FOOD PRODUCTS.- There is a market for American food products, especially dried fruits and preserved meat products, in the Calais district of France, according to T. D. Davis, American Consul at Calais. The produce dealers serving the mining districts adjacent to that city have expressed active interest in forming direct contacts with American exporters. In the Consul's opinion, the market offers an outlet for American food products in export quantities.

LIVESTOCK, MEAT AND WOOL NEWS

FRANCE.- Livestock in France on December 31, 1924 showed a general increase over the same date last year with the exception of asses according to Le Bulletin des Halles, Boureses et Marches quoting the Ministry of Agriculture. Swine increased 7 per cent from 5,405,840 to 5,801,830 there being an increase of 6 percent in sows and 10 percent in pigs under 6 months. Cattle increased 2 percent to 14,024,960 and sheep 2 percent to 10,171,520. Detailed figures for all animals will be found on page 775.

GERMANY.- Figures of inspected slaughter in Germany for the first quarter of 1925 published in the Deutscher Reichsanzeiger for May 22, 1925 show substantial increases over the same period of 1924 and also increases over 1913 in the number of sheep and cattle slaughtered during that period. Sheep slaughterings were 68 percent larger than during the same period of 1924 and 5 percent greater than during the same period of 1913 while cattle slaughterings were 22 percent larger than for the first quarter of 1924 and 3 percent larger than during the first three months of 1913. Swine slaughterings have not yet reached the pre-war figure. They were 24 percent below the figure for 1913 although there was an increase of 29 percent over the 1924 period. Detailed figures appear on page 776.

NEW ZEALAND.- Killings of lambs, sheep and cattle in New Zealand for the first six months of the season i.e. November 1, 1924 to April 30, 1925 were larger than for the same period of the previous season according to a cable to the London Manager of the New Zealand Meat Producers' Board published in "Cold Storage" May 21, 1925. Lamb carcases amounted to 4,093,145, an increase of 3 percent; mutton carcases 2,031,924 an increase of 33 percent and beef quarters 336,309 an increase of 85 percent. The total stocks of meat in store and on steamers not yet departed on April 30, 1925 were as follows: Lamb carcases 1,607,000 wether mutton carcases 563,000 ewe mutton carcases 516,000 and beef quarters 227,000.

ALGERIA.- Since 1922 exports of Algerian goat skins to France have exceeded 1,000,000 per annum, according to L. W. Haskell, American Consul at Algiers. Production is estimated at approximately 100,000 dozen per year. There are about 4,000,000 goats in the three departments of Algeria practically all owned by natives. The skins are in great demand throughout the world on account of their strength, fineness and beauty. The hide is usually without the head and feet and is rolled. There are opportunities for appreciable expansion of this industry if the natives had forage and accommodation for their animals. Little care is bestowed on them, however, in spite of the fact that goats milk, meat, hair, skins and butcher's offal constitute some of the country's most valuable resources. About 200,000 are killed annually for domestic consumption.

FRUIT AND NUT NEWS

HEAVY ORANGE EXPORTS FROM PALESTINE.- Exports of Jaffa oranges for the 1924-25 season will amount to over 2,000,000 cases against 1,589,000 cases for 1923-24 and 1,365,000 cases for 1922-23, according to O. S. Heizer, American Consul at Jeruseleum. For the period October 1924 to March inclusive exports reached 1,733,000 cases a record number. Domestic consumption amounts to about 110,000 cases annually.

FRUIT EMBARGO IN CUBA.- The importation of fruits and vegetables into Cuba from foreign countries other than the United States is prohibited due to the danger of the Mediterranean Fruit Fly and other pests, says Consul Arthur Frost at Habana. The only exceptions to this prohibition are: potatoes from the Canary Islands and clean truck garden seeds and plants imported for experimental purposes, if not affected by other quarantine regulations.

GERMANY TO REDUCE TARIFF ON GREEK CURRANTS.- The Greek Foreign Office has announced that by a provisory agreement signed on May 15 Greece extends to Germany the conventional tariff rate on all products imported from Germany in return for which the latter reduces its import duty on currants coming from Greece from the old rate of 2.6¢ per pound to 1.7¢ per pound. The German Government promises also to make still further reductions in the tariff on Greek currants, upon the signing of the definit agreement, says C. E. Dickerson, American Trade Commissioner at Athens.

AUSTRALIAN GOVERNMENT MAKES ADVANCES ON DRIED FRUITS.- The Commonwealth Government will make an advance on the 1925 crop of currants, sultanas and lexias, when placed under the control of the Dried Fruits Export Control Board, amounting to 80 per cent of the f.o.b. value of the fruit. The Board will use the money to defray the packing expenses of the growers, either in whole or in part.

INCREASED FRENCH DEMAND FOR AMERICAN CANNED FRUIT.- Orders for American canned fruit to be placed during August and September will be greater for 1925 than for any other year since the war, according to W. W. Corcoran, American Vice Consul at Boulogne-sur-mer. The most popular varieties are pineapples, pears, peachers and apricots in standard American tins.

GROWING EXPORTS OF CUBAN GRAPEFRUIT.- Exports of grapefruit from Cuba exclusive of the Isle of Pines for 1924 were valued at $647,954 against $593,459 for 1923 and $732,296 in 1922. Ripening early in August the crop is generally six to eight weeks earlier than that of Florida. After the coming of the American fruit returns received on Cuban crop give little or no profit.

ORANGES ARE POPULAR IN NORWAY.- All classes of people in Norway use oranges, but lemons and grapefruit are usually considered too expensive, according to G. K. Stiles, American Consul at Stavanger. Oranges and lemons come largely from Spain and Italy, with a few from Portugal. The small quantities of grapefruit consumed are from the United States via London.

SUMMARIES OF LEADING ARTICLES

BRAZILIAN COTTON INDUSTRY.- Brazilian cotton production in 1924 amounted to 604,730 bales of 478 pounds net, a record figure for that country. Most of this crop was produced in northern Brazil, and is a perennial long staple tree cotton. Southern Brazil produces about 30 per cent of the crop from annual short staple plants grown from seed originally imported from the United States. The climate in many non-producing areas is favorable to cotton production. In such areas, however, coffee and sugar cane still predominate as profitable crops. Other factors unfavorable to cotton are the inadequacy of the labor supply and of transportation facilities. While it is true that the present prices for cotton may maintain present production, it may be said that there will be no considerable expansion in Brazilian cotton areas for the next ten or fifteen years unless conditions change to such an extent as to make coffee and sugar cane unprofitable. See page 744.

RECENT DEVELOPMENT OF RUSSIAN DAIRY INDUSTRY.- In 1916 the number of cows in the territory of the present Union of Socialist Soviet Republics is reported by the International Institute of Agriculture to have been 22,234,000 out of a total of 50,082,000 cattle. In 1922 there were 18,194,000 cows in a total of 32,977,000 cattle. By 1924, according to Soviet authorities, total cattle amounted to about 85 per cent and the number of cows to 99 per cent of the 1916 figures. The increase in the number of cows, therefore, has been proportionately greater than in total cattle during recent years. The 1913-14 butter production in Russia was 33,000,000 pounds, of which about one-half was exported. Production during the summer of 1924 represented about 30 per cent of the pre-war output, and it is expected that the production for the current season will amount to 50 per cent of the prewar figure. This industry is receiving particular attention from the Soviet Government. See page 773.

THE ARGENTINE FRUIT INDUSTRY.- The 1924 exports of fruit from Argentina amounted to 4,409,000 pounds against 2,909,000 pounds for 1923, and 904,000 pounds for 1920. The bulk of the fruits exported are grapes constituting 98 per cent followed by peaches and plums. Of the 1924 shipments 1,861,000 pounds were sent to the United States against 1,109,000 pounds in 1923 and 10,000 pounds in 1921. This remarkable growth in exports is chiefly due to the stimulus given by the Argentine railways and the National Government. See page 769.

GROWTH OF THE JAFFA ORANGE INDUSTRY.- For the 1924-25 season Palestine expects to export about 2,000,000 cases of Jaffa oranges against 1,589,000 and 1,365,000 cases for 1923-24 and 1922-23 respectively. For the period October 1924 to March 1925, inclusive, exports totaled 1,733,000 cases, a record figure. Domestic consumption amounts to about 110,000 cases annually. There are at present 6,818 acres under trees of bearing age, with 1,000 more of non-bearing age. It is expected that 200 more acres will be planted this year, making a total orange area 8,018 acres. Palestine is second to Spain in importance as a source of oranges for the British markets. See page 770.

THE BRAZILIAN COTTON INDUSTRY a/

Early History

Cotton has been grown in Brazil as a commercial crop for several centuries and is probably indigenous to the country. Soon after the discovery of Brazil in 1500 explorers reported the Indians using the fiber secured from the cotton plant for the manufacture of many articles of utility. By 1800 Brazil was annually exporting as much as 50,000 bales of 423 pounds each, net weight. By 1810 exports amounted to 101,000 bales annually. This figure rose to over 300,000 bales during the American Civil War. Up until the middle of the nineteenth century cotton constituted the chief export commodity of the country.

As a result of the rapid expansion in cotton production in the United States, however, world market prices for cotton were reduced to such an extent that Brazilian interest in its production began to subside. Moreover, planters in Southern Brazil after the middle of the nineteenth century began to turn their attention to coffee. While there was a sharp revival in Brazilian cotton growing during the American Civil War, producers were once more forced out of the market as soon as American cotton re-entered foreign trade on a large scale. When slavery was abolished in Brazil in 1888 the large planters in the north gave up the production of cotton entirely. Thereafter cotton became a minor crop in Brazil grown only by small farmers in conjunction with beans, manioc roots and rice. All interest was subsequently concentrated on the two rapidly growing industries, coffee in the south and rubber in the north and these soon became the principal export commodities of the country.

During the past fifteen or twenty years, however, there has been a revival in the Brazilian cotton growing industry. A number of factors are responsible for this revival, the first being the rubber crisis. When plantation rubber began to dominate the market and to supplant the crude black balls which the Amazon "seringueros" produced in so primitive a fashion, Brazil lost its second most important export commodity. This crisis released a large number of native laborers, many of whom drifted south, furnishing labor for a limited expansion in the cotton industry. The recovery of cotton prices as a result of the war and the boll weevil ravages in the United States have subsequently aroused interest in Brazilian cotton cultivation.

Cotton Districts

Brazil possesses two distinct cotton producing areas, the one in the north where most of the cotton grown is perennial, long staple, tree cotton which does not require replanting for a period of several years, and the other in the south where practically all of the cotton produced is annual, short staple, grown from seed originally imported from the United States. While northern Brazil grows some short staple cotton, the quantity produced is estimated to be less than ten per cent of the total production of that section.

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a/ This report is based upon replies to a questionnaire sent to Mr. Leon M. Estabrook, formerly American Agricultural Commissioner in Latin America, and on information secured from Mr. Edward C. Green, Collaborator of the United States, Department of Agriculture at Natal, Pernambuco.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

American and other foreign technical experts who have investigated cotton growing possibilities in Brazil assert that cotton can be grown in every state in the country. The total production for 1924 is estimated at 605,000 bales of 478 lbs. each, net weight. Of that amount 422,000 bales or about 70 per cent was produced in northern Brazil and 183,000 bales or about 30 per cent in the Southern district. Eleven of the twenty Brazilian states produced over 15,000 standard American bales each in 1924 and it was produced on a smaller scale in six of the remaining states. From the standpoint of present production the states of Ceara, Parahyba, Rio Grand do Norte, Pernambuco and Maranhao are the most important states in northern Brazil while Sao Paulo is by far the most important in the south.

Production Statistics by Districts and by States

The following table gives the production of lint cotton in Brazil by states and by districts from 1911 to 1924.

BRAZIL: Production of lint cotton.
(Bales of 478 pounds, net weight)

State	1911	1912	1913	1914	1915	1916	1917
NORTHERN DISTRICT	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Amazonas	15	22	30	30	23	22	25
Para	17	76	244	350	695	1,041	2,223
Maranhao	38,204	48,362	58,965	54,778	33,592	32,845	46,885
Piauhy	10,218	13,742	16,721	14,817	10,284	10,484	8,829
Ceara	58,449	63,747	72,800	69,661	52,817	47,241	57,996
R. G. Norte	37,585	43,238	52,822	49,022	34,925	32,407	37,452
Parahyba	53,525	48,750	60,827	60,768	42,794	42,783	49,476
Pernambuco	48,850	52,750	68,245	65,588	46,791	46,866	50,161
Alagoas	28,359	28,049	31,722	31,438	31,373	27,914	29,955
Sergipe	24,997	27,026	24,832	22,390	20,632	17,553	21,384
Bahia	11,688	13,031	14,988	15,827	14,001	14,001	14,300
SOUTHERN DISTRICT							
Esp. Santo	a/	-	a/	b/	b/	b/	b/
Rio de Janeiro	a/	-	-	b/	b/	b/	b/
Minas Geraes	22,487	24,085	29,385	30,110	16,847	16,843	18,342
Sao Paulo	25,927	55,093	45,245	50,034	33,885	46,672	76,489
Parana	a/	a/	a/	b/	b/	b/	b/
Goyas	a/	a/	a/	b/	b/	b/	b/
Total	360,321	417,971	476,826	464,763	338,659	336,682	413,517

See next page for source.

a/ Included in totals for neighboring states.

b/ Probably included in totals for neighboring states.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

BRAZIL: Production of lint cotton, cont'd.
(Bales of 478 pounds, net weight)

State	1918	1919	1920	1921	1922	1923	1924
	Bales	Bales	Bales	Bales	Bales	Bales	Bales
NORTHERN DISTRICT							
Amazonas	77	144	189	223	291	396	b/
Para	7,557	8,691	4,991	5,325	5,808	6,100	6,572
Maranhao	36,720	38,085	50,436	52,607	50,205	50,850	57,467
Piauhy	8,664	8,945	10,835	12,141	14,898	15,364	16,234
Ceara	52,811	63,121	71,865	72,743	76,338	78,639	83,074
R. G. Norte	33,339	35,192	39,019	48,156	57,123	60,032	60,548
Parahyba	52,420	56,450	54,083	56,491	60,410	62,881	62,932
Pernambuco	50,881	60,522	47,144	51,473	58,825	61,842	69,735
Alagoas	22,413	26,444	34,075	31,526	28,780	28,714	27,410
Sergipe	18,683	21,453	21,333	22,430	23,100	23,662	22,332
Bahia	10,988	13,631	13,166	12,922	14,810	15,140	15,607
SOUTHERN DISTRICT							
Esp. Santo	a/	a/	a/	343	443	472	669
Rio de Janeiro	a/	a/	a/	391	477	578	839
Minas Geraes	20,759	22,029	29,694	30,240	30,881	28,833	31,464
Sao Paulo	91,149	105,809	99,435	105,180	128,616	140,293	144,157
Parana	a/	a/	a/	1,375	1,316	1,395	1,623
Goyaz	a/	a/	a/	546	670	749	1,051
Total	406,461	460,516	476,265	504,082	552,991	575,940	604,730b/

Ministerio de Agricultera, Industria e Commercio; "Servico de Algodao."
a/ Probably included in totals for neighboring states.
b/ Includes 3.016 bales grown in other states not included above.

Varieties of Cotton Produced a/

A large number of different varieties of cotton are produced in Brazil, certain types being characteristic of the Northern District and other types of the Southern District. As previously stated the North produces practically all long staple perennial tree cottons while the South produces the annual short staple varieties. The characteristics of the North and the South overlap in the central section. Minas Geraes, the northernmost state of southern Brazil for example produces both a perennial tree cotton and an annual short staple. On the other hand, some districts in northern Brazil grow a short staple annual cotton, claimed to be American Upland of the Russell variety. Since the pink bollworm has added its depredations to that of the leaf worm, however, the production of annual cotton in northern Brazil is less than ten per cent of the total for that area.

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a/ The information on varieties is based largely on statements made by Mr. Edward C. Green, Collaborator of the United States Department of Agriculture and Consulting Agricultural Engineer for S.A. Wharton Pedroza, Cotton Exporters, Natal, Pernambuco.

THE BRAZILIAN COTTON INDUSTRY. CONT'D.

Varieties Grown in Northern Brazil

The many different varieties of cotton grown in Northern Brazil will generally fall within one of three types, i.e., "Matta," "Sertao" and "Serido." These names apply to three distinctive cotton producing regions. Although several varieties of cotton are produced in each region, there are usually one or two varieties that stand out as especially characteristic of or adapted to each.

The "Matta" zone is the costal plain extending back about thirty miles from the sea-shore to the first hilly plateaus of the interior in the states of Rio Grande do Norte, Parahyba, Pernambuco, Alagoas and Sergipe and extending further and further toward the interior on its way southward. The "Matta" zone as a rule may be characterized as a damp region where an herbaceous mixture of hybrids predominate. A feature of this littoral belt is the large number of broad and fertile valleys covered with rich alluvial deposits brought down from the higher regions of the interior. "Matta" cottons are picked from August to February. It is the zone of excessive rainfall in which, except in the drier valleys that branch out toward the interior, practically nothing but annual varieties of herbaceous cotton are grown. In many localities, however, these herbaceous cottons are allowed to remain in the soil two or more years. In the drier regions of the "Matta" zone a type of tree cotton called "Quebradinho" is usually the predominant variety produced.

The next of these regions is the "Sertao" which begins far back from the coast where a grass known as "Capim Panasco," a coarse yellowish grass, covers vast stretches. This is a high region, characterized by boulders, small brushwood and triangular peaks of mountains surrounding a plateau. All of the cotton grown in this region is called "Sertao" although several different varieties occur, notably "Verdao," "Inteiro," "Quebradinho," and "Moco." "Sertao" cottons are picked from July to January.

The home of the best Brazilian cotton is the "Serido" district, consisting of a number of high, arid plateaus situated in Rio Grande do Norte. The "Serido" proper is defined by the six municipalities of Caico, Jardim do Serido, Acary, Flores, Curraes Novos and Serra Negra. The only "Serido" cotton in existence comes from this region. In actual practice, however, the name has been given to cotton somewhat similar grown in a number of the surrounding states. Several kinds of cotton are grown in the Serido but probably the best and most famous is "Moco."

Characteristics of the North Brazilian Cotton a/

"Quebradinho" called "Crioula" in some places, is a tree cotton with a fine, glossy fiber varying in length from 9/10 to 1-4/10 inches. It remains in the soil from three to five years. It is important in the dry sections of Ceara, Maranhao, Parahyba, Alagoas, Sergipe and in the Pirapora zone of Minas Geraes. The seed of this cotton is very similar to the "Moco" seed of the Serido district.

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a/ The lengths of fiber given for the various varieties are the field lengths based on observation in the fields and not the lengths after ginning.

THE BRAZILIAN COTTON INDUSTRY. CONT'D.

"Verdao", which is known also under the names Riqueza, Azul, Rome-letras, etc., is a tree cotton distinguished when the seed is pure by its special strength and its silky appearance. Its special characteristics, however, is the fact that the seed is verdigris green and is easily recognized in any heap of mixed seed. It is grown northward from Bahia and the Sao Francisco River to the coast except in those districts where the soil and climate are not suitable and other varieties have to be planted. The planting of "Verdao" cotton has been recommended for practically the whole of north and northwest Brasil since it is considered one of the best types now being produced. The fiber ranges according to locality from 9/10 to 1-1/2 inches in length and has good spinning qualities. As a result of its green seed it can easily be picked from a mixed lot thus simplifying seed selection. It is believed that "Verdao" cotton has a great future in the states of Ceara, Bahia, Sergipe, Alagoas and Pernambuco. In most of these states it is now the best fiber in the mixture cultivated. "Verdao" in many places remains in the field four years.

"Moco" is a tree cotton peculiar to the Serido district in the State of Rio Grande do Norte. It makes its first appearance in Pernambuco and is produced from there northward through Parrahyba and Rio Grande do Norte. "Moco" cotton is generally of a creamy color and has a peculiar smell, somewhat like goatskin. It has a naked seed, black or sometimes brown, with a small, two-pronged fork. The fiber reaches 1-4/10 to 1-8/10 inches in length. "Moco" cotton ripens altogether and if the ground has sufficient moisture after the first picking, new leaves and bolls form, which are ready two months later. "Moco" cotton is said to be the only plant in the Serido district that can withstand the droughts. This cotton is considered to be the best variety grown in Brazil. Owing to its high reputation it is being cultivated in many other districts of Brazil but it seldom turns out strong and long except in the Serido district proper.

"Herbaceo", although an annual cotton, is grown in certain sections of northern Brazil, especially in level areas that are subject to heavy annual floods. Some parts of the extremely level areas, particularly of Ceara, are flooded annually for 14 or more days. As "Verdao" cannot stand so long an immersion "Herbaceo" is planted in such places. In northern Brazil it is usually grown in mixture with some other variety but in the south it is grown as a pure strain. It is of American origin and is often called "Big Boll". The fiber is very strong and coarse and ranges from 8/10 to 1-2/10 inches in length. The seed is hairy, with yellowish green linters (ginning percentage about 30 per cent). In many places in northern Brazil this annual is grown for two or three years, i.e., the plant is cut off about three inches from the ground after it has grown a crop; next season it sprouts out again with a new crop.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

"Rim de Boi," known at times as "Inteiro", "Creolo", "Maranhao", and "Ox Kidney", makes its first appearance in Minas Geraes, and extends northward through the States of northern Brazil. It is cultivated to a considerable extent in the States of Minas Geraes, Maranhao and Para. "Rim de Boi" is a tree cotton characterized by its peculiar seeds, seven or eight of which adhere together, in the shape of a kidney (the Portuguese name of which is "rim"). The fiber is strong and of good color, averaging from 1 inch to 1-4/10 inches in length and is used largely in the manufacture of hammocks. The natives prefer this to any other for spinning on their hand spinning wheels. The great drawback of this variety is said to be the heavy weight of the seeds as a result of which the percentage of fiber is only about 20 per cent. The seed is excellent for crushing purposes.

There are few districts in Northern Brazil in which cotton is not badly mixed. A common and possibly the best of these mixtures is "Herbaceo-Verde", a tree cotton, which is evidently a cross between "Verdao" and "Herbaceo". This cotton is particularly adapted to certain wet districts and yields a strong, silky fiber, about 1-1/10 inches in length. The States of Maranhao and Para produce considerable quantities of this variety. It is a quickly maturing cotton, which fact makes it particularly adapted for the rainy areas as it is ready before the arrival of the rains and the development of pink bollworm and other insect pests. Another common type is a hybrid of "Inteiro" crossed with "Verdao", grown especially in Sergipe and Alagoas.

Varieties Grown in Southern Brazil

The States of southern Brazil, with the exception of Minas Geraes, produce practically nothing but annual short staple varieties. The exception is found chiefly in the Valley of the Sao Francisco River in Minas Geraes where several long staple tree cottons are grown, principally "Inteiro", "Quebradinho" and "Verdao". Both Minas Geraes and Bahia immediately to the north produce considerable quantities of the herbaceous cotton of American origin, often called "Big Boll", but this is seldom Russell Big Boll.

Sao Paulo, by far the most important cotton producing state of Brazil, produces practically nothing but cotton of the annual American Upland type. The leading varieties grown are "Russell Big Boll", "Cleveland", "Webber", and "Sunbeam". Several successful crosses of American cotton and local types have been developed among which are the "Novo Paulista", Carioba" and "Day's Pedigreed Big Boll". The fiber of these cottons ranges from 8/10 to 1-2/10 inches in length. Among the other varieties grown in various districts are "Herbaceo" and "Durango".

Planting and Picking Season in Northern Brazil.

The seasons of cotton planting and picking in northern Brazil are governed by the rains. As a general rule cotton is planted at the beginning of the rainy season. It must be borne in mind that northern Brazil is the district of perennial tree cottons and that in many districts cotton is

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

allowed to remain in the soil from five to ten years. The pruning and cutting down process in such districts corresponds to the planting season. In northern Brazil cotton is picked in every month of the year, but perhaps the largest percentage of the picking falls within the season beginning in June and continuing until December or January. The rains in this area generally cease around the beginning of July.

Planting in the State of Sergipe takes place in February-March and picking begins in August and lasts until January. Planting in the State of Alagoas takes place in May-June and the cotton is ready for picking in about four months, a most unusually quick period of growth being characteristic of this state.

The pruning process in the "Matta", "Serido" and "Sertao" districts in Rio Grande do Norte, Parahyba and Pernambuco usually takes place just before the arrival of the first showers of the rainy season, i.e., around the first of February. "Matta" cotton is usually being picked from September to the beginning of the rainy season. "Serido" and "Sertao" cottons are picked from July to January.

Ceara, situated in the northeastern part of Brazil has a dry climate. When it is very wintry the rains begin to fall in December but frequently the rains come only after the equinox in March. It is not so much that no rain falls but it is not spread over the season; it generally falls in large quantities but runs off quickly. The bulk of the cotton is picked in September-November.

The rainy season in Piauhy, Maranhao, and Para extends from the end of December to June, fully six months, and consequently the principal period of growth for cotton must take place between May and early December. Cotton is planted in May and picking begins early in December.

Cotton grows all the year round in Bahia. The principal producing region in that state lies along the course of the Sao Francisco River and its tributaries. Cotton planting in the central producing district of the state takes place immediately after the first rains, which in that particular region usually occur in October. The cotton is ready for picking from May but continues to give lint until September. The main crop in the northern part of Bahia is harvested in June, but the shrubs bear almost every month, as after every shower new blossoms form. In southern Bahia the crop begins in August to September and whenever there is a shower a new crop comes on.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Planting and Picking Season in Southern Brazil a/

The planting season in the states of southern Brazil runs from September to October. The picking season generally runs from April through June. In the state of Minas Geraes, the northernmost state of southern Brazil, the seeds are planted between September and November, depending upon the first rainfall. The bulk of the crop in this state is picked in June and there are usually two pickings. Planting in the Sorocabana zone of the state of Sao Paulo usually takes place in October-November. Picking begins at the end of April. In the Central cotton producing zone of Sao Paulo planting begins in November and as most of the cotton grown in this zone is of the early maturing variety picking begins about the middle of April.

Cultivation Methods in Northern Brazil

The use of modern farm implements is practically unknown in northern Brazil. All cultivation is done by means of hoes of the same type as our so called "sprout hoes". Most of the cotton grown is perennial and of course breaking of the land is done only at renewal periods. It is customary for the farmer to cut down the timber and heavy vegetation and plant his cotton on the unplowed land by digging holes with hoes and dropping in the seed by hand. It is also a general practice to plant corn, beans and other crops in the same fields with cotton. Due to heavy rains in many parts of northern Brazil weeds frequently are taller than the cotton plants. In the State of Maranhao many farmers plant cotton only one year, changing to new sites at the end of each crop, because of the dense undergrowth which springs up in the rainy season.

Cultivation Methods in Southern Brazil a/

Machinery is used to a considerable extent in Southern Brazil, although a great deal of cultivation is only by hoes. The general type of machinery in use is the class used by the small farmers in the United States, i.e., walking planters, cultivators, the one mule type predominating, and other implements of the same class. There is comparatively little cultivation on a large scale where modern implements of the larger type, such as tractors, etc., are in use.

Cotton in Minas Geraes is cultivated only by small holders. Indian corn is usually grown in the same field. The land is prepared from June to August with ploughs in some localities but generally only a hoe is used. As in northern Brazil several different varieties are usually found growing in the same field. The majority of the cultivators allow the shrubs to grow for several years. There are some planters, however, who plant seeds every year, in which case the American herbaceous kind is used.

Sao Paulo is the principal cotton producing state of Brazil although coffee production is the leading industry of the state. The state has three distinct cotton zones; the Sorocabana situated west of the city of Sao Paulo, where cotton is said to have been cultivated for the past 150 years; the Central Zone, where the staple crop is coffee; and the Northwestern Zone, which is just being developed.

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a/ Data on cotton zones and cultivation methods in Sao Paulo from Aerno S. Pearse in "Brazilian Cotton".

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Production in the Sorocabana Zone is carried on by small cultivators, using rather primitive methods. Two or three hoeings are given during the growing period, according to the growth of the weeds. Rotation of crops is unknown, the same field being used two or more years after which it is left fallow for a few years as there is plenty of vacant land. Cultivation methods in the Central Zone are more advanced than in any other part of Brazil. Rotation of crops is adhered to; generally Indian corn, then cotton, then three years' sugar cane being grown. Cotton in this zone is frequently planted between rows of coffee trees. The Central Zone of Sao Paulo is practically the only cotton producing region in Brazil where scientific cotton plant selection and breeding is being carried on. The Northwestern Zone is just being developed. A large part of this section is still virgin forest. Natives from the State of Bahia make a specialty of clearing the land, burning down the forests, and getting it ready for cultivation by settlers.

Commercial Fertilizers.

Commercial fertilizers are not used in Northern Brazil and only to a limited extent if at all in Southern Brazil. Farmers in Southern Brazil are shifting somewhat from coffee to cotton on lands no longer rich enough for coffee.

Irrigation.

Very little if any cotton is being produced under irrigation although large areas can be made productive if irrigation facilities are provided. Several large irrigation works are under construction in the states of Ceara, Rio Grande do Norte and Parahyba in Northern Brazil on lands suitable for growing cotton but now subject to severe droughts. Most of these works have been suspended temporarily because of lack of funds. According to official estimates these irrigation projects when completed will provide water for about 395,000 acres.

Land Prices.

The price of land in Brazil varies so widely that it is difficult to give a representative figure. Land prices, in general, depend upon proximity to railroads or other transportation facilities. In Southern Brazil, on account of better rail communications and more and better highways, land prices are higher than in Northern Brazil. According to the Assistant Chief of the Federal Cotton Service land prices in Sao Paulo range from $0.40 to $6.00 per acre in the littoral section from $2.00 to $20.00 per acre for the red coffee lands. In

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

northern Brazil land that will produce good cotton but located far from main lines of transportation can be purchased for as low as 10 cents per acre. It may be said that there is no general price for land in Northern Brazil but that prices depend on the necessity for sale by the owner and the ability of the purchaser to negotiate a good deal. Practically all of the land is privately owned and many of the owners are in need of money. This makes it possible to buy land at very low prices but oftentimes it is very difficult to obtain a clear title.

Tenancy

According to Consul Hickerson at Rio de Janerio there are three systems of cotton cultivation in Brazil; first, cultivation by land owners who work the crops with hired labor; second, cultivation by tenants who give a fixed portion of the produce to the landowners; and third, cultivation by tenants who pay cash rents.

In the second system, which is the most common, the landowner usually directs the cultivation of the crop. The instances where the owner cultivates his own crop or where the tenant pays cash rent are relatively infrequent. Ordinarily the owner of a plantation in southern Brazil containing, for instance, 1,000 acres of cotton land, has forty or more families living on the place, each family having a small plot of ground on which to grow vegetables and raise chickens for its own use. In actual practise, however, the tenants are not self-supporting and many things are purchased that could be produced at home.

The landowners are frequently well educated but their training seldom includes agricultural instruction. There is a growing tendency, however, for the sons of landowners to secure such training. The tenants and laborers are generally lacking in a knowledge of modern agriculture and methods of cultivation.

Labor Supply.

The labor supply of northern Brazil is ample for the immediate future. There are enough people there to produce a great deal more cotton than is now being produced but under the present primitive methods of cultivation this supply is of little value. Very few immigrants are entering the north. An influx of labor into the State of Ceara is expected when the hugh irrigation works now under construction are completed. Most of this influx will be supplied by the neighboring states.

THE BRAZILIAN COTTON INDUSTRY. CONT'D.

There is a shortage of labor in southern Brazil. While the expansion of cotton production in the southern states will depend to a considerable extent on an increase of the labor supply, it will also be affected by relative profits to be gained from the cultivation of coffee, which has been thought to be more profitable than cotton. Coffee has been grown for a long time and coffee producers are not disposed to discontinue the production of coffee to take up cotton. Cotton is cultivated between the coffee trees on many estates as a guarantee against total crop failure resulting from the destruction of the coffee crop by frosts. Cotton is picked before the arrival of the frost.

With the price at which labor can be secured in Brazil, the cost of producing cotton at the present time is considerably below the cost of production in the United States. This fact, however, must be termed as temporary since any considerable expansion would immediately cause a shortage in the supply of labor and carry as its corollary an increased cost of production. Consul Hickerson at Rio de Janeiro states that according to a survey made during 1924 by an American expert the cost of growing, harvesting and ginning 8/10 to 1 2/10 inch cotton in the state of Sao Paulo was 3 cents per pound. The cost of growing harvesting and ginning 1 3/10 to 1 9/10 inch cotton in northern Brazil worked out at about 7 cents a pound.

Climate.

By far the greater part of Brazil consists of a range of plateaus. It is this vast expanse of table lands that is of greatest interest from the cotton point of view. The rainfall of the whole of northeastern Brazil, from Ceara down to the interior of Alagoas is somewhat irregular and in certain sections, particularly in Ceara, at periods of five or seven years there are seasons when no rail whatever falls. The rains in Northern Brazil are plentiful from December-January to May-June. The trouble is not that no rain falls but that it is not spread over the seasons; it generally falls in large quantities within a very short time and finds its way at once into river beds where it quickly disappears beneath the surface. The completion in the next few years of large dams to store up this water is expected to open large areas for colonization and irrigation. Rainfall in Bahia, the southernmost state of northern Brazil, and in the cotton producing states of southern Brazil, i.e., in Minas Geraes and in Sao Paulo, is sufficient for all agricultural purposes and is particularly well suited for cotton growing. The rainy-season there extends from October to April.

The following tabulation gives particulars of rainfall in or near important cotton producing sections over a period of years:

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

RAINFALL: Observations Made in Various Cotton Producing Areas.

Month	Maranhao			Ceara				R.G.do Norte		Parahyba
	Barra Corda	Sao Bento	Imperatriz	Guaramiranga	Quixeramobim	Porangaba	Quixada	Natal	Novo Cruz	Parahyba
Jan.	7.6	8.5	10.3	7.1	3.0	4.9	4.9	2.3	2.9	3.6
Feb.	7.0	9.5	9.7	9.4	4.0	11.1	5.5	4.8	3.1	5.9
March	6.4	13.6	9.8	11.1	5.9	11.1	7.6	5.7	5.6	6.3
April	3.9	13.3	6.1	9.8	5.1	10.9	4.8	8.6	5.0	6.5
May	2.4	10.4	4.4	8.1	3.7	9.0	4.6	5.7	4.0	11.4
June	.8	7.7	.5	6.7	1.6	5.5	3.0	12.4	6.2	14.0
July	.3	2.7	.4	2.8	.8	1.0	.6	7.9	3.6	8.8
Aug.	.5	1.7	.8	4.0	.5	1.6	1.0	4.9	3.1	6.4
Sept.	1.1	.3	.8	2.1	.4	.9	.1	1.4	.5	2.5
Oct.	1.7	.6	2.9	1.6	.3	.1	.2	.5	.3	1.8
Nov.	3.3	1.1	3.2	2.0	.1	.6	.3	.6	.1	1.3
Dec.	4.8	4.4	6.7	2.9	1.2	1.3	1.6	1.0	.3	1.9
Total	39.8	73.8	55.6	67.6	26.6	58.0	34.2	55.8	34.7	69.4

Month	Pernambuco			Alagoas		Sergipe	Bahia			
	Nazareth	Joboatao	Guaranhuns	Satuba	Pao de Assucar	Aracaju	Ondina	Caetite	San B. Lagas	Morro Chapeo
Jan.	4.2	4.9	3.0	1.8	1.8	1.5	3.2	5.5	4.3	6.4
Feb.	5.4	7.4	2.5	3.9	.8	1.8	4.8	3.3	5.8	3.9
March	5.9	7.3	1.7	4.4	1.4	4.2	5.5	3.1	5.1	3.7
April	4.6	7.0	3.3	4.3	1.9	3.4	9.7	2.6	8.3	3.7
May	8.8	13.0	5.2	8.3	2.2	6.7	10.2	.6	7.7	1.4
June	8.1	14.8	6.3	11.7	3.4	5.1	9.6	.4	8.5	1.4
July	7.2	11.7	5.9	9.2	4.0	4.7	7.4	.4	10.4	1.7
Aug.	5.3	8.8	4.9	7.2	2.4	2.7	4.9	.2	6.1	1.2
Sept.	1.8	3.5	2.1	4.6	.9	1.6	3.3	.9	3.4	.8
Oct.	.8	1.3	.6	1.3	.9	2.5	4.7	2.8	5.0	1.9
Nov.	.7	1.4	.7	1.0	1.3	.9	4.7	5.1	4.6	3.4
Dec.	1.4	1.9	2.0	2.0	2.9	2.3	6.0	5.9	6.0	6.6
Total	54.2	83.0	38.2	59.7	23.9	37.4	74.0	30.8	75.2	36.1

Month	Sao Paulo		Minas Geraes				Santa Catharina		
	Maristella	Bondeirantes	Pirapora	Theop. Ottoni	S. Francisco	Januaria	Florianopolis	Curitabanos	Theresopolis
Jan.	10.7	11.5	13.0	8.5	11.8	8.2	5.6	6.8	8.9
Feb.	7.2	8.3	6.6	5.1	5.6	3.8	4.3	5.7	9.8
March	5.2	5.9	6.8	7.0	5.6	4.7	5.7	6.0	7.5
April	2.8	6.1	3.9	5.1	3.5	3.7	2.8	4.1	3.6
May	2.0	1.5	.3	3.9	1.1	.5	1.7	3.4	2.0
June	1.4	1.4	1.0	1.4	.2	.4	2.6	7.1	4.7
July	1.0	1.0	.2	.9	.2	.3	1.6	4.4	2.8
Aug.	1.5	1.5	.6	1.0	.4	.2	3.1	4.6	4.3
Sept.	2.1	2.1	1.2	1.1	1.0	1.4	3.6	7.8	9.3
Oct.	4.8	4.7	4.0	4.7	4.1	3.4	3.4	5.6	4.7
Nov.	6.0	6.1	6.0	8.8	8.9	6.7	2.7	4.4	4.7
Dec.	8.6	9.7	9.5	9.6	10.6	9.0	3.2	5.3	5.1
Total	53.3	59.8	53.1	57.1	52.8	41.9	40.3	65.2	67.4

Compiled from "Boletin de Normales".

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Insect Pests and Cotton Diseases.

One of the most destructive pests in Brazil is the pink boll worm, known locally as the largarta rosada, which is about as serious in Brazil as the boll weevil in the United States. The leaf worm, known locally as curuquere, also does considerable damage, especially in the annual varieties produced in northern Brazil. The ant (hormiga) also commands considerable attention. Another pest is an insect locally called "Broca", known scientifically as Gasterocercodes Gossupii, a boring bug which enters the stem of the cotton stalk just above the surface of the ground, cuts the plant in a circular manner around the stalk, causing it to die. This pest is stated to be the worst enemy of cotton in northern Brazil.

Nothing is being done in northern Brazil to eradicate insect pests. Sometimes seeds are mixed with sand and exposed to the sun in order to kill the pink boll worm larvae. Due to the fact that most of the cotton in northern Brazil remains in the fields for several years and the fact that only a few farmers prune their stalks, a large number of pink boll worm larvae are in existence at all times of the year.

In southern Brazil, however, particularly in Sao Paulo, efforts are being made to combat the pink boll worm. These efforts, unfortunately, have not been very effective to date. In many places in the coffee region of Sao Paulo, gangs of laborers are sent to the fields to pull up the old cotton stalks, rake up the leaves and trash, and burn it so that the ground is left perfectly clean and bare for the succeeding crop. Cottonseed is fumigated with carbon bisulphide in concrete cellars lined with glass for the purpose of destroying the pink boll worm larva.

Cotton Marketing in Northern Brazil.

The cotton grown in the "Matta" region of northern Brazil is always purchased in the seed by the local dealer who in turn sells to exporting firms at seaboard. "Sertao" and "Serido" cottons are usually ginned in small interior establishments for the farmer who transports his cotton to the local market by pack trains. Each mule carries two bales of from 132 to 243 pounds gross, balanced one on each side. The grower sells to a local buyer who in turn sells to exporters. Each interior town has a fixed market day.

As a general rule the same price is paid for all grades of cotton regardless of cleanliness. The buyer transports the cotton to the nearest railroad and ships it to seaports to be cleaned, assorted and repressed for export or for shipment to mills in southern Brazil. The town of Campina Grande is the most important interior cotton market in Northern Brazil due principally to the fact that it is the interior railroad center nearest to the "Serido" district.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Cotton Marketing in Northern Brazil, Cont'd.

Generally the owner of a local ginning establishment buys up the cotton from the small farmer either on his own account or for the account of some large exporter in Fortaleza, Recife or Natal. There are three large cotton exporting houses in Northern Brazil who handle approximately 75 per cent of the entire production of the northern cotton producing zone. These firms have buying agents throughout the country who buy the cotton from the small merchants and ship it to their respective concentration points at Fortaleza, Natal and Recife. The port of Pernambuco (Recife) is the principal cotton exporting port of Northern Brazil. A large quantity of cotton from the neighboring states is exported through that port. Most of the large merchants of Northern Brazil are foreigners, chiefly American and English.

Cotton Marketing in Southern Brazil.

Much of the cotton grown in the southern district is sold in the seed to landlords or to small merchants who have furnished the farmers with supplies during the growing season. The small merchants or the landlords press the cotton in small hand presses into bales of about 165 pounds gross weight. These loosely pressed bales are transported by mule back, ox carts or small auto trucks to large country points and sold to gins or correspondents of the export buyers. The agents of the large buyers cut the bagging, sample the cotton and pay for it according to its grade and quality. Other buyers merely pay an average price for all grades, clean or dirty, in which case the cotton is not sampled until it reaches the gins. When the cotton reaches the large buying concerns in the port of export, the country bales are torn apart, the cotton is cleaned by being passed over a sifter or wire screen and is then compressed into bales averaging about 400 pounds in weight with a density of 36 to 40 pounds per cubic foot. While most of the cotton is sold by the farmers in the seed many of the large coffee estates have their own gins.

Commercial Cotton Classification.

The cotton exporters of Natal, Parahyba and Pernambuco are the only ones in Brazil who have attempted some differentiation of staple and grade, according to Mr. Edward C. Green. First grade "Serido" and "Sertao" are called "Primerias", second grade cotton from these districts are called "Medianas" and the remainder is called "Refugo", meaning waste. Each bale is sampled in the presence of the seller and immediately classified. The price of the first grade is usually fixed in the contract at the time of purchase. Deductions for seconds or "Medianas" are agreed upon at the time of sampling. Exporters seldom purchase "Refugos" at any price. Cotton classed as "Refugo" is usually disposed of to paper mills. One of the serious difficulties that will have to be overcome in the marketing of the Brazilian cotton crop is the general failure on the part of the interior buyers to recognize the value of clean over dirty cotton, long over short fibers and uniform over irregular staple.

Federal Cotton Service Establishes Grades

According to a report dated May 7, 1925 from Mr. W. L. Schurz, American Commercial Attache at Rio de Janeiro, the Cotton Service of the Brazilian Ministry of Agriculture has recently taken steps towards establishing a uniform classification of cotton in Brazil. A special department has been established which is to offer its grading services to cotton merchants at a nominal price. The grades fixed by the official cotton classifiers of this service are to serve as a basis for sales on the exchange at Sao Paulo. The standards adopted were decided upon by the head of this special service in consultation with directors of the Sao Paulo Exchange. The grades were fixed on the basis of approximately 500 samples of cotton from all parts of Brazil.

According to the classification decided upon Brazilian cotton is to be divided into three general classes depending on the length of staple, as follows:

SHORT FIBER: Includes all cottons of herbaceous variety, cultivated in the States of Sao Paulo, Minas Geraes, Rio de Janeiro, Goyaz and in the "Mata" zone of the northern States, having a length of 8/10 to 1-1/10 inches. a/

MEDIUM FIBER: Consists of types of cotton generally known as "Sertao" with fiber varying from 1-1/10 to 1-3/10 inches.

LONG FIBER: Includes the cotton produced in Ceara and that produced in the "Serido" district and any other having a staple of 1-3/10 inches and longer.

Each of the general classes will be subdivided according to cleanliness, color, quality of ginning, and amount of foreign matter into the following five grades:

Type 1 - Superior
Type 2 - Good
Type 3 - Common
Type 4 - Passable
Type 5 - Ordinary

Everything possible is to be done to make the service general throughout the cotton producing states of Northern and Southern Brazil. The Government of Alagoas has already ordered the adoption of this system of classification and Sergipe is expected to adopt the system in the near future.

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a/ No mention is made as to the disposition of cotton under 8/10 inch in length of staple.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Shipments to Southern Brazil

Considerable quantities of cotton produced in northern Brazil are shipped to mills in the south. The principal textile manufacturing centers of Brazil are the cities of Sao Paulo and Rio de Janerio which take large quantities of long staple cotton from northern Brazil. Consequently Rio de Janeiro and Sao Paulo are both heavy importers of long staple cotton from the north and exporters of short staple cotton from southern Brazil.

Weight of the Bale

The weight of the country bales ranges from 132 pounds to 243 pounds, averaging 145 pounds to 164 pounds gross weight. The size of the bale depends largely on whether it is to be transported to market on mule back or in oxcarts or auto trucks. The tare for country bales ranges from 3-1/2 to 5-1/2 pounds, averaging about 4 pounds per bale. A light jute material similar to that used for oat sacks in the United States is used for covering all cotton, whether it be country bales or compressed bales. The ties on the country bales are usually a smooth wire slightly larger than the wire used for baling hay in the United States. The export bales, on which steel ties are used, average about 400 pounds gross in weight. The tare of the export bale ranges between 6-1/2 and 11 pounds per bale with a large majority running to the higher figure.

Ginning.

A large percentage of the gins used in Brazil are of the Eagle and Murray brand and the general type is one stand of 30 to 40 saws, operated by small merchants who buy cotton in the seed and gin it before selling. According to official returns the number of gins in Brazil in 1916 was 1,524 of which number 873 were driven by steam, 508 by animal, 97 by hand, 20 by water, 21 by electricity and 5 not stated. The individual states having the largest number of gins were Parahyba with 290, Rio Grande do Norte 271, Ceara with 268, Pernambuco 173, Maranhao 141 and Alagoas 119. All other states had less than 100 each. The proportion of fiber obtained in northern Brazil is considerably lower than that obtained in the United States, perhaps ranging 28 per cent and under. In southern Brazil the proportion is probably 29 to 30 per cent. The saw gins used in Brazil are satisfactory when dealing with short staple cotton, but when used on the long staple varieties the fiber is cut and reduced by 1/10 to 3/10 inches with a serious loss to the producer.

Transportation Facilities

According to official statistics of the Brazilian Ministry of Transportation, the railway mileage on December 31, 1923, was only 18,580 miles.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

For a country as large as Brazil, with a total area of 3,275,510 square miles, such a mileage is ovbiously small and the expansion of the country's agricultural and mineral development will be handicapped until better internal transportation facilities are made available. Many regions in the different states of Brazil are adapted for the cultivation of cotton, but these areas are at present of little value because of the lack of transport.

By far the greater portion of the railway mileage of Brazil is found in southern Brazil. The state of Sao Paulo, particularly throughout the coffee district, has many railroads, but due to the inadequacy of rolling stock there are long delays in shipment. The state of Minas Geraes, however, is especially unfortunate. Although recognized as one of the best cotton producing states of Brazil, it is too far from the ports to make it possible with the present steamer and railway facilities to compete with cotton nearer the coast. For that reason the cotton produced in Minas Geraes is used almost exclusively in the mills established in that state and by the local hand spinners.

In northern Brazil, lack of transportation is a serious problem. Much of the transportation is by water, with long hauls from the farms to the railway stations or ports. The only railway of importance is the Great Western of Brazil, operated by a British Company. The bulk of the cotton of northern Brazil moves to seaboard over the Great Western. This road extends through the states of Alagoas, Pernambuco, Parahyba and Rio Grande do Norte and has a total mileage of slightly over 1,000 miles. Consul Hickerson at Rio de Janeiro states that the Great Western has been operating at a loss for several years due to the refusal of the Brazilian Government to sanction tariff increases and that the cotton producing industry will receive a severe setback unless the status of the road is improved. Many hundreds of miles of hard surface highways have been constructed in Ceara, Parahyba and Rio Grande do Norte within the past few years, but these are said to be rapidly disintegrating from want of repair and upkeep.

Export Taxes. a/

Consul J. D. Hickerson at Rio de Janeiro in his report to the Department states that one of the menances to large scale cotton production in Brazil is the system of state export taxes whereby shipments, whether for a foreign country or for another state in Brazil, are required to pay a certain levy. The Brazilian states obtain from 50 to 100 per cent of their revenue from these export taxes. The amount of the export tax is usually ad valorem, being fixed by the state legislature. Close students of the Brazilian

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a/ Consul J. D. Hickerson at Rio de Janeiro, in a report to the United States Department of Agriculture under date of September 1, 1924.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

cotton industry maintain that these taxes must be abolished if Brazil is ever to have a large cotton industry.

The following tabulation shows the amount of tax on exports of ginned cotton from the principal Brazilian states.

State	Export Tax	State	Export Tax
Alagoas	6% ad valorem	Para	$0.046 per lb.
Bahia	2% " "	Parahyba	10% ad valorem
Ceara	10% " "	Pernambuco	5% " "
Espirito Santo	5% " "	Rio de Janeiro	5% " "
Maranhao	10% " "	Sao Paulo	$0.023 per lb.
Matto Grosso	7% " "	Sergipe	8% ad valorem
Minas Geraes	4% " "		

Export of Cotton Seed

Cotton seed is shipped to Europe and to Rio de Janeiro and Sao Paulo for oil. The United Kingdom takes practically all of the exports. Total exports average around 24,000 short tons annually. According to Consul Hickerson the annual production of cotton seed in Brazil ranges from 220,000 to 275,000 short tons. According to the Brazilian Ministry of Agriculture there are in Brazil thirty-six cottonseed oil mills, most of which are in the State of Sao Paulo, Pernambuco and Ceara. The majority of these mills, however, are small because the cottonseed oil business on a commercial scale is only of recent origin.

Many of the larger plantations have small seed presses, extracting the oil on the ground and shipping it to the seaboard to be refined. A considerable part of the seed is not utilized because of the remote situation of some of the cotton lands, especially in northern Brazil and the inadequate transportation facilities. The value of cottonseed as a feed for cattle is not appreciated. Cottonseed meal and hulls are used for feeding purposes only to a limited extent.

The following tabulation, compiled by Consul Hickerson, gives the exports of cottonseed from Brazil by years.

Year	Short Tons	Year	Short Tons
1913	54,916	1921	26,998
1919	24,985	1922	32,056
1920	25,994	1923	29,904

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Cotton Exports from Brazil

Brazil exports only some 20 per cent of her annual cotton production. Exports during the five years 1919-23 averaged over 101,000 bales annually. Production during the same period averaged 514,000 bales per annum. Great Britain, Portugal, France, Belgium and Germany are the leading export markets.

The following table together with the table on page 763 give the exports of cotton from Brazil over a period of years by countries of destination and by ports of shipment from Brazil.

COTTON (UNMANUFACTURED): Exports from Brazil by countries, 1909-1924
1 bale = 478 pounds net.

Year ending December 31	Germany	Belgium	United States	France	United Kingdom
	Bales	Bales	Bales	Bales	Bales
1909	100	1,100	0	300	38,200
1910	a/	600	0	1,500	46,800
1911	2,400	1,300	0	2,100	46,600
1912	5,100	2,300	0	1,700	63,000
1913	4,500	1,600	400	8,800	138,200
1914	7,700	300	a/	11,000	100,500
1915	0	0	0	0	19,900
1916	0	0	100	0	4,800
1917	0	0	700	0	24,000
1918	0	0	200	200	6,700
1919	900	900	2,100	20,900	22,700
1920	5,400	4,600	1,600	40,500	41,700
1921	7,200	1,200	3,600	14,000	47,800
1922	8,400	3,500	5,600	27,700	81,700
1923	1,200	700	a/	9,100	54,700
1924 (10 mo. - Jan.-Oct.)					

COTTON (UNMANUFACTURED): Exports from Brazil by countries, cont'd.

Year ending December 31	Netherlands	Italy	Portugal	Other countries	TOTAL
1909	0	a/	6,000	300	46,000
1910	0	0	2,400	200	51,500
1911	0	0	12,700	2,500	67,600
1912	700	0	3,400	1,200	77,400
1913	3,900	0	14,800	400	172,600
1914	700	0	19,300	900	140,400
1915	700	0	3,500	a/	24,100
1916	0	0	0	a/	4,900
1917	800	400	1,400	100	27,400
1918	0	0	4,800	100	12,000
1919	2,300	1,100	4,700	a/	56,100
1920	800	400	18,800	100	113,900
1921	0	1,400	15,200	a/	90,400
1922	700	900	27,800	300	156,600
1923	900	100	21,200	500	88,400
1924 (10 mo. - Jan.-Oct.)					22,300

Compiled from Comercio Exterior do Brasil, 1910-1923.
a/ Less than 50 bales.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

COTTON EXPORTING PORTS: Exports of lint cotton from Brazilian ports.

(Bales of 478 lbs. net weight)

Port	1912	1913	1914	1915	1916	1917
Belem do Para	7	25	18	---	47	79
San Luiz de Maranhao	566	4,175	3,751	767	---	1,681
Ilha do Cajueiro (Piauhy)	652	7,454	4,774	1,325	---	464
Fortaleza (Ceara)	2,251	17,330	23,148	470	12	5,070
Natal (Rio Grande Do Norte)	14,329	25,431	8,924	83	20	2,588
Cabedello (Parahyba)	22,548	45,333	31,702	688	---	1,115
Recife (Pernambuco)	33,774	61,979	55,801	20,777	4,665	16,323
Maceio (Alagoas)	3,148	9,616	7,602	---	---	---
Bahia	---	----	---	---	---	---
Rio de Janeiro	---	203	72	---	182	62
Santos (Sao Paulo)	47	17	31	1	13	20
Other ports	41	1,040	4,545	0	0	0
Total	77,363	172,603	140,368	24,111	4,939	27,402

Port	1918	1919	1920	1921	1922	1923
Belem do Para	440	1,357	1,658	285	910	750
San Luiz de Maranhao	1,430	4,109	2,513	7,990	11,275	1,193
Ilha do Cajueiro (Piauhy)	231	1,380	3,458	3,848	4,123	1,066
Fortaleza (Ceara)	1,113	5,724	13,746	14,575	37,743	21,566
Natal (Rio Grande Do Norte)	---	774	3,747	8,725	11,993	6,300
Cabedello (Parahyba)	---	140	8,313	13,999	20,963	14,025
Recife, (Pernambuco)	8,636	7,806	18,107	16,026	25,969	18,150
Maceio (Alagoas)	50	77	1,184	---	208	---
Bahia	---	67	220	1	525	---
Rio de Janeiro	---	6,815	8,988	3,114	2,998	2,534
Santos (Sao Paulo)	64	27,685	51,937	21,843	39,448	22,825
Other ports	1	117	31	22	415	3
Total	11,965	56,051	113,902	90,428	156,570	88,412

Compiled from Commercio Exterior do Brasil, 1911-1923.

Domestic Consumption of Cotton in Brazil.

By far the greater part of the cotton produced in Brazil is consumed there. The Brazilian production of cotton during the five years, 1919-1923, averaged 513,958 bales annually. Exports during the same period averaged 101,072 bales annually. Thus it is seen that approximately 80 per cent of the crop or an average of 412,885 bales annually is consumed at home. Not all of this disappearance represents mill consumption. It is estimated that about 80,000 bales[a] are consumed by household hand spinners in the manufacture of clothing and for quilts, bedding, etc. According to Consul Hickerson the domestic mill consumption of cotton amounts to about 415,000 bales annually.

The bulk of the cloth being used in Brazil is made within the country itself. Imports of cloth have been declining as national production has increased. While the part which imports play in supplying the domestic cloth requirements of the country is decreasing, unavoidable conditions seem to predetermine that the production of the finest goods will be denied the Brazilian textile industry for some years to come. Up to the present, Brazilian cotton, which is practically the only cotton used in the Brazilian mills, has not been of the highest standard. Furthermore the Brazilian textile worker lacks the skill of the British and the American laborer. For those reasons the cloth produced in the Brazilian mills is to a large extent of a coarse nature. The domestic textile industry, moreover, is fostered to a great extent by a very high tariff which makes it practically impossible to import anything but the highest grade fabrics.

Advantages and Disadvantages of the Brazilian Textile Industry.

While no comparative statistics are available it is quite certain that native mills have increased in both number and output since the war. The factors tending to encourage the development of the Brazilian textile industry are high import duties, a growing home market due in a large measure to immigration, low overhead and labor charges and an absence of legislation requiring the installation of costly equipment for the safety of employees. The chief disadvantages of the domestic textile industry are climatic conditions unfavorable to spinning and weaving, lack of experienced and efficient labor, lack of modern equipment in all but a few of the mills and lack of adequate transportation facilities.

There has recently been a considerable development of hydro-electric power in Sao Paulo which it is believed will act as a stimulus to the erection of new mills. The spinning mills in Sao Paulo and Rio de Janeiro and those in the state of Minas Geraes and Bahia use not only large quantities of annual short staple cotton but take large quantities of long staple perennial cotton from northern Brazil as well. The domestic textile industry is, therefore, a stimulating force to cotton growing in the country.

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[a] Estimate of Mr. Arno S. Pearse, Secretary of the International Federation of Master Cotton Spinners' and Manufacturers' Association.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

Many mills have plantations and distribute seed to neighboring plantations. While they have no interest in the export of raw cotton after their own needs are supplied, the existence of a system of state export taxes tends to encourage the manufacture of the cotton in the state where it is grown.

No complete official statistics are available covering the Brazilian textile industry. Consul Hickerson, however, has forwarded the following result of an unofficial census taken by the Cotton Spinning and Weaving Association of Rio de Janeiro during 1921. Although admittedly incomplete, this census is considered to be the best statistical information yet available on the Brazilian textile industry.

TEXTILE INDUSTRY: Unofficial Census of Cotton Textile Industry in Brazil

State	Factories	Spindles	Looms	Operatives
	Number	Number	Number	Number
Alagoas	10	43,000	1,700	6,000
Bahia	17	140,000	8,000	8,000
Ceara	9	24,000	600	1,300
Federal District	14	411,000	13,000	19,000
Espirito Santo	2	2,500	120	200
Maranhao	16	80,000	2,300	4,700
Minas Ceraes	60	130,000	5,800	18,000
Parahyba	7	10,000	420	600
Parana	7	1,200	545	160
Pernambuco	8	94,000	3,300	6,800
Piauhy	1	2,600	160	300
Rio Grande do Norte	1	5,000	160	300
Rio Grande do Sul	4	27,000	900	2,500
Rio de Janeiro	23	180,000	6,000	12,500
Sao Paulo	55	415,000	14,700	25,000
Santa Catharina	6	2,100	103	200
Sergipe	8	53,000	1,900	3,400
Total	248	1,621,300	59,208	108,960

Statistical Position of Cotton in Brazil from 1911 to 1923

The following table compiled from official sources gives the area, yield per acre, consumption and exports of cotton from Brazil over a period of thirteen years. The yield per acre column contains merely the statistical computations of the average yield based on area and production. According to these statistics the general average yield per acre in all of Brazil is about 226 pounds per acre. It is known, however, that the actual yield per acre is considerably higher in many places.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

COTTON IN BRAZIL: Statistical Position from 1911 to 1923.

Year	Area	Yield per Acre	Production of lint	Consumption Total amount	Consumption Per Cent of crop	Exports Total amount	Exports Per cent of crop
	Acres	Pounds	Bales	Bales		Bales	
1911..	778,407	221	360,320	292,767	81.3	67,553	18.7
1912..	878,166	228	417,971	340,608	81.4	77,363	18.5
1913..	1,005,759	227	476,823	304,220	63.8	172,603	36.2
1914..	1,029,041	216	464,813	324,445	69.8	140,368	30.2
1915..	806,401	201	338,660	314,549	92.9	24,111	7.1
1916..	791,145	203	336,683	331,744	98.5	4,939	1.5
1917..	911,710	217	413,517	386,115	93.4	27,402	6.6
1918..	821,467	237	406,459	394,494	97.1	11,965	2.9
1919..	805,415	273	460,515	404,464	87.8	56,051	12.2
1920..	947,549	240	476,264	362,362	76.1	113,902	23.9
1921..			504,080	413,652	82.1	90,428	17.9
1922..			552,991	396,421	71.6	156,570	28.3
1923..			575,940	487,528	84.6	88,412	15.4

Governmental and Other Promotion of Cotton Growing

Very little foreign capital is invested in cotton production in Brazil. It is reported that a British concern has recently been organized for promoting cotton cultivation under the colonizing system in the State of Sao Paulo. It has also been reported that a French syndicate is negotiating for a large concession of land on the San Francisco River in West Bahia for the purpose of promoting cotton cultivation on the colonization principle. The International Cotton Federation and the International Federation of Master Cotton Spinners and Manufacturers Associations have endeavored to promote cotton growing in Brazil, mainly through propaganda.

Brazilian Agencies Promoting Cotton Culture

The Federal Cotton Service with headquarters in Rio de Janeiro is doing considerable work in the promotion of better cultural methods in cotton. The State of Sergipe has a very good cotton service as a part of the state government and has employed an American expert from Texas to head the work. The state of Sao Paulo is doing considerable cotton promotion work by means of demonstration farms, etc. Recently the State of Rio Grande do Norte has employed a so-called chief of cotton service, who is to devote his energies to the management of a farm, the purpose of which is to produce a relatively pure variety of seed for distribution to producers. An important company in Natal, Rio Grande do Norte, has been carrying on scientific work in plant and seed selection for several years with a view to recovering pure varieties.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

At present, this firm is operating four experimental farms in different sections of Rio Grande do Norte.

A British company organized by Lord Lovat for cotton growing in Brazil has purchased two properties in Sao Paulo and planting was initiated last September. To encourage production, the state of Espirito Santo has purchased an estate of 7,200 acres, which has been handed over to a local concern for 30 years, rent free. During the first ten years the state will receive 5 per cent of the value of the cotton produced and thereafter 8 per cent. An English syndicate is also negotiating with the Parana State Government for the acquisition of large blocks of land for cotton cultivation. The most potent factor for stimulating cotton culture in Brazil, however, is continuation of the high prices that prevailed in 1923 and 1924.

Future of Cotton Industry in Brazil.

At prevailing prices it is believed that cotton offers larger returns as an export commodity than any other crop that can be grown on a large scale in Brazil with the possible exceptions of coffee and sugar. The country has an abundance of favorable natural conditions for the production of cotton and even under the prevailing methods of cultivation remarkable yields of lint have been obtained. This fact together with the high prices offered for cotton is the principal reason for the present interest in cotton production in Brazil.

The development of plantation rubber in Asia has made it impossible for Brazil to continue to compete in the world's rubber markets, leaving coffee as the most important item in the export trade at the present time. The consumption of coffee, of which three-quarters of the world's requirements are grown in Brazil, has not only been on the decline since the war but Africa is increasing her output. Brazil has always been a sugar-growing country, but the same factors that have been limiting the expansion of the cotton industry are limiting the development of the sugar cane industry, i.e., primitive methods of cultivation, lack of efficient labor for the mills and inadequate transportation and marketing facilities. The yield of cane in Brazil is very high, ranging from 15 to 25 tons per acre and from four to six crops can be secured without replanting. The sugar content of the cane is also high, reaching 18 per cent but because of the character of the mills a very low percentage of extraction is secured ranging only from 4 to 9 per cent of the weight of the cane.

The land in southern Brazil is more adaptable to cultivation with modern implements than in northern Brazil; transportation facilities, while not adequate, are the best that Brazil possesses and are sufficient to handle a fair increase in production; the climate is suitable for foreigners; and the labor situation, it is thought, can be solved by immigration.

THE BRAZILIAN COTTON INDUSTRY, CONT'D.

The present supply of labor, while insufficient for an immediate increase, is more industrious and more intelligent than in northern Brazil. Cotton, however, comes in direct competition with coffee in Sao Paulo. The large coffee estates represent an enormous investment of capital; they are generally profitable and the plantations last a life time. It is hardly probable that these plantations and the investments they represent should be destroyed to make way for cotton under present conditions.

The prospect for immediate development in northern Brazil is not as good as in the south. It has a less favorable climate than the southern district, fewer transportation facilities and does not attract immigrants. Northern Brazil is also subject to severe drouths every six or seven years, which result in almost total crop failures. The effect of these, however, can be remedied by irrigation works.

Mr. Arnos S. Pearse states that seed farms constitute the key to the cotton problem of Brazil and that unless these farms are created Brazilian cotton will never be able to compete on the world's markets with cotton from other countries. There is a complete absence of uniformity of fiber amongst Brazilian cottons which can only be remedied by the distribution of good seed of one type only. The work of producing standard varieties of seed, however, pertains to the scientific branch of agriculture and requires years of patience and continuity of action. Seed farms must be established in all of the cotton districts of Brazil, and care must be taken to insure that each district grows only one kind of cotton to prevent hybridization and mixing of seeds at the gin.

In spite of the encouragement of private and official organizations, the Brazilian farmer has shown little interest in improving his methods of cultivation. Labor, while cheap, is not sufficient for a cotton industry of the first magnitude. Up to the present, immigration has not come into the country in sufficient volume to meet the increased demand for labor. The lack of good roads and railway facilities with no prospect for improvement in the near future is such as to eliminate entirely such states as Minas Geraes, Matto Grosso and Goyaz from the rank of important producers. Moreover, the state export taxes are considered a serious burden to large scale production. There is also a lack of capital for the establishment of new plantations.

Conclusion

Upon the basis of the preceding analysis of the cotton situation in Brazil it may be said that there will be no considerable expansion in the area devoted to cotton in Brazil during the next ten or fifteen years unless conditions change to such an extent as to make coffee and sugar cane unprofitable, and the price of cotton remains at its present high level. In other words the solution of the difficulties at present restricting the possibility of an expansion in production is largely dependent upon the prospect of profit from cotton in competition with other crops notably coffee and sugar.

EXPANDING THE ARGENTINE FRUIT INDUSTRY

During the year 1924, the Argentine shipments of fresh fruits to the United States, England, Brazil and Uruguay amounted to 4,409,000 pounds as compared with 2,908,970 pounds in 1923 and 903,890 pounds in 1920. This remarkable growth in exports is chiefly due to the stimulus given by the Argentine railways and the national government to the fruit industry. The principal fruits exported are grapes, peaches, and plums, of which grapes constitute 98 per cent.

In 1924, the Argentine exports of fresh fruits to the United States amounted to 1,860,700 pounds against 1,108,900 pounds in 1923 and 10,100 pounds in 1921. Our imports of Argentine fruits in 1924 were apportioned as follows:

Fruits	Amount (Pounds)
Grapes	1,446,550
Peaches	185,297
Melons	140,184
Plums	68,078
Other	20,591

The Argentine fruit exporters anticipate an increased business with the United States in 1925, basing this expectation not only upon the success of the past season but also upon the recent restriction of the Spanish grapes by the United States Department of Agriculture.

The past season has been the first in which exports of Argentine fruits to England reached really commercial proportions, although the English market does not as yet begin to compare with either Brazil, Uruguay or the United States. The first shipment of Argentine fruits to England was in 1922 and in 1923 only 18,739 pounds were imported while in 1924 importation reached a total of 188,868 pounds.

Besides the great increase in its exports of fresh fruits, Argentina is also building up an important export trade in grape wines. In 1911 only 922 gallons of wine were exported, but during the war the exportation of this product reached phenomenal proportions. In 1916, the exports amounted to 1,532,186 gallons and the increase continued at such a rate that in 1919, 2,509,615 gallons were shipped out of the country. Since then, wine exports have declined, in 1923 amounting to only 437,649 gallons. This figure, however, is in striking contrast with that of pre-war years.

The fruit industry in Argentina has developed primarily as a natural growth to supply domestic needs, of which grapes are the most important. The center of this industry is in the provinces of Mendoza and San Juan, producing 95 per cent of the crop, although grapes are grown to some extent in all the important sections north of the Rio Negro.

EXPANDING THE ARGENTINE FRUIT INDUSTRY, CONT'D.

Peaches are also an important crop in Mendoza and San Juan as well as in the islands comprising the delta of the river above Buenos Aires. Oranges are grown to a considerable extent throughout the whole northern and northeastern part of the country. Apples are not produced in sufficient quantity to supply the domestic demand.

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GROWTH OF THE JAFFA ORANGE INDUSTRY

For the 1924-25 season, Palestine expects to export about 2,000,000 cases of Jaffa oranges, against 1,589,000 for 1923-24 and 1,365,000 for 1922-23, according to O. S. Heizer, American Consul at Jerusalem. For the period October 1924 to March 1925, inclusive, exports totaled 1,733,000 cases, a record figure. Domestic consumption amounts to about 110,000 cases annually.

The area under orange groves is placed at 6818 acres, with 1,000 more under young non-bearing trees. It is expected that 200 more will be planted this year, making a total of 8018 acres. Owing to severe frost and a comparative lack of rain following hot winds, quality this season is somewhat deteriorated, late shipments of February and March being rather dry upon arrival at market. Shipments to Egypt begin in October, and to Europe in November, lasting through April. The heaviest shipments occur from January to March. Crop reports are available as early as June and July.

Owing to the fact that usually the late shipments secure the best prices, and that there are no cold storage facilities, there is no carryover at the season's end. Prices in November averaged $3.45 per case, for first grade fruit, but fell off slightly in December and January. In February, however, cases of 250, first grade were bringing $5.35. This is attributed largely to the bad condition of Spanish fruit in England. On March, prices again declined as the ill effects of frost in Palestine became evident. Spanish supplies were heavy also, and Jaffa producers were overexporting in an effort to close their season. Cases contain from 136 to 152 large oranges and from 240 to 250 smaller fruit. The most common sizes are 136, 144, 136/144, 144/152, 152, 240/250 and 250 Prices for Europe are quoted in sterling and for Egypt in Egyptian pounds.

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BRITISH COLUMBIA TO MAKE FRUIT SURVEY

A survey of the possibilities of fruit growing in British Columbia is about to be made under the supervision of the Provincial Department of Finance and Industry, according to Consul H. S. Tewell at Vancouver. An investigation will be made of the cost of marketing and handling fruit in order to determine the possibility of increasing returns to the producer.

AUSTRALASIAN APPLE SHIPMENTS

The following tabulation dated as of May 27, 1925, furnished by "The White Service" of London, Hull, Liverpool and Newcastle and forwarded to the Department by the American Agricultural Commissioner, Mr. E. A. Foley at London, gives the latest statistics available on quantities of apples already shipped from Australasian ports and the quantities still to be shipped during the present season. From the statistics given it is seen that space has been booked for a total of 2,398,000 cases of which some 20,000 cases were pears. Shipments are considerably in excess of early estimates. Complete statistics for the season will be published as soon as they are available.

AUSTRALASIAN FRUIT SHIPMENTS, SEASON 1924-25.

Vessel	Cases carried	Final Loading Port	Date of Departure	Destination	Arrived or due
Mooltan	37,102	Fremantle	Feb. 23	London	Mar. 27
Surrey	6,476a/	Melbourne	Feb. 6	London & Hull	Apr. 2 (Hull)
Rotorua	6,500	Wellington	Feb. 25	London	Apr. 3
Ormonde	15,000	Fremantle	-	London	Apr. 9
Waimana	16,500	Wellington	Mar. 14	London	Apr. 13
Esperance Bay	82,000	Fremantle	Mar. 13	London & Hull	Apr. 18
Otira	58,257	Melbourne	Mar. 4	Hamburg, Hull & London	Apr. 19 (London) b/
Runic	48,228	Fremantle	--	London & Liverpool	Apr. 22 c/
Ulysses	52,095	Adelaide	Mar. 11	Liverpool	Apr. 23
Maloja	107,603	Fremantle	Mar. 24	London	Apr. 24
Asphalion ...	40,905	Albany	Mar. 19	Hull	Apr. 25
Themistocles.	37,306	Melbourne	Mar. 10	Hull & London	Apr. 25 (Hull) d/
Ferndale	30,000	---	--	Hull & London	Apr. 27 (Hull) e/
Barambah	40,000	Beauty Point	Mar. 5	London & Liverpool	May 3 (London) f/
Ionic	11,500	Wellington	Mar. 26	London	May 5
Barrabool ...	121,000	---	--	London	May 7
Port Darwin..	30,500	Fremantle	Mar. 25	London	May 11
Somerset	11,636	Wellington	Apr. 1	London	May 11
Boorara	50,106	---	--	London & Liverpool	May 13 (London) g/
Ceramic	100,000	Fremantle	--	London & Liverpool	May 14 (London) h/

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a/ Shipment of Pears

b/ Hamburg 25,976 cases of apples, London 18,191 cases of apples and 14,090 of pears

c/ London 17,500 cases and Liverpool 30,500 cases.

d/ Hull 16,054 cases and London 21,252 cases.

e/ Discharged 21,850 cases at Hull.

f/ Discharged 34,300 cases at London. g/ 2,427 cases of pears and 29,977 of apples at London, and 17,702 cases of apples at Liverpool. h/ London 37,000 cases and Liverpool 63,000 cases.

AUSTRALASIAN FRUIT SHIPMENTS, SEASON 1924-25, CONT'D.

Vessel	Cases carried	Final Loading Port	Date of Departure	Destination	Arrived or due
Oronsay	51,000	Fremantle	---	London	May 14
Aeneas	39,500	Adelaide	Apr. 1	Liverpool	May 17
Moreton Bay ..	95,000	Fremantle	---	Hull & London	May 17 (Hull)
Port Sydney ..	21,500	Wellington	Apr. 10	London	May 20
Mongolia	66,000	Fremantle	Apr. 20	London	May 21
Beltana	59,000	---	---	London	May 23
Tairoa	11,750	Auckland	Apr. 15	London	May 26
Port Rembla...	15,500	Wellington	Apr. 15	Montevideo	May 27
Ormuz	30,500	---	---	London	May 28
Demosthenes...	38,000	Fremantle	Apr. 13	London & Hull	May 30(London)
Bakara	65,000	---	---	London & Liverpool	May 31(London)
Maimva	15,000	Wellington	Apr. 20	London	May 31
Matakana	17,625	Wellington	Apr. 21	London	June 2
Port Caroline.	66,250	Melbourne	Apr. 19	Southampton, Hull & London	June 3 (Southampton)[l]
Turakina	11,882	Wellington	Apr. 29	London	June 5
Port Adelaide.	70,000	Fremantle	May 7	London	June 7
Jervis Bay ...	99,000	---	---	Hull & London	June 8 (Hull)[m]
Balranald	128,000	---	---	London	June 8
Kent	25,000	Wellington	May 2	London & Glasgow	June 9(London)[n]
Orama	35,000	---	---	London	June 11
Tainui	8,200	Wellington	May 7	London	June 13
Port Pirie ...	60,000	Adelaide	May 16	London & Hull	June 14
Port Brisbane.	12,000	Wellington	May 6	London	June 14
Persic	48,000	Fremantle	---	London & Liverpool	June 16
Raranga	11,000	Fremantle	May 22	London	June 18
Moldavia	63,000	Fremantle	May 28	London	June 19
Borda	56,000	---	---	London	June 20
Port Wellington	12,000	Wellington	May 17	London	June 24
Euripides	67,000	Fremantle	May 11	Hull & London	June 24
Argyllsture...	10,000	Wellington	---	London	June 25
Ascanius	43,000	Adelaide	---	Liverpool & Glasgow	June 26
Cathay	15,000	Fremantle	June 1	London	July 5
Ballarat	100,000	---	---	London	July 6
Hobson's Bay..	30,000	---	---	London	July 11
Mooltan	---	---	---	London	July 17

i/ Hull 20,000 cases and London 75,000 cases.
j/ London 6,000 cases & Hull 32,000 cases.
k/ London 64,000 cases.
l/ London 13,250 cases; Southampton 15,000 cases & Hull 38,000 cases.
m/ Hull 60,000 cases & London 33,000 cases.
n/ London 19,920 cases and Glasgow 5,000 cases.

RECENT DEVELOPMENT OF RUSSIAN DAIRY INDUSTRY.

Within the last two years there has been a notable recovery in the number of cows in Russia as well as in the exportation of butter from that country, according to a statement appearing in the first issue of the Commercial Year Book of the Soviet Union for 1925. "The export of butter plays an important part in the welfare of the cattle rearing areas, and Russia attaches, therefore, great importance to that question," it is stated.

In 1916, before the Revolution, the number of cows in the territory of the present Union of Socialist Soviet Republics is reported to have been 22,234,100 out of a total of 50,081,800 cattle, according to the International Institute of Agriculture of Rome. In 1922 there were 18,194,200 cows with a total of 32,976,600 cattle. By 1924 the total number of cattle had increased, according to Soviet authorities, to about 85 per cent and the number of cows to 99 per cent of the number in 1916. The increase in the number of cows has thus been proportionately greater than in total cattle during recent years.

Exportation of butter which had been discontinued entirely in 1916 was resumed only in 1923, with the shipment to Great Britain of somewhat less than a million pounds. In 1924 the quantity of butter exported increased considerably. The quality also of the exported product improved, being in no way inferior in 1924, it is stated, to the prewar article.

In 1913-14 the quantity of butter produced in Russia was 336,000,000 lbs., of which about one-half was exported. The quantity of butter manufactured in the summer period of 1924 represented about 30 per cent of the prewar output, and during the current season it is intended to increase that output to 50 per cent of that of the pre-war period.

In order to extend further the butter industry, a special committee was established in Russia (the "Maslocentre") in July, 1924, to organize the manufacture, purchase, and export of butter. This committee is specially active in Siberia and in the principal butter producing areas in European Russia.

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CATTLE IN THE FRENCH SUDAN

In 1923, the year of the last livestock census, there were 1,215,000 cattle, 2,324,000 sheep, 1,724,000 goats and 140,000 horses and asses in the French Sudan, according to W. J. Yerby, American Consul at Dakar, Senegal. The Colony annually sends 60,000 to 70,000 cattle and 100,000 to 120,000 sheep to the seacoast colonies of west Africa, for slaughter. Government authorities are trying to improve the breeds of horses and sheep by selection and by imported stock.

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NEW BRUNSWICK MAY PRODUCE POTATO PRODUCTS

With New Brunswick potatoes selling in some instances as low as 30 cents per barrel, there is considerable interest in the proposed manufacture of potato products in that Province, according to G. C. Woodward, American Consul at Campbellton, N.B. Graded potatoes sell at approximately 50 cents per barrel on the farm and at about $1.00 per barrel delivered in Campbellton.

New Brunswick potato growers have suffered severe losses through the British embargo against North American shipments. Some relief, however, has been experienced through inquiries from Maine potato dealers seeking supplies to fill orders for delivery in western states. While it is difficult to estimate the quantity of potatoes on hand in New Brunswick at present, it is far in excess of the usual local requirements. Adequate supplies in the United States have curtailed shipments of the New Brunswick product southward, and it is very probable that considerable quantities will have to be destroyed.

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REVIVED ACTIVITY IN GERMAN WOOL MARKET.

The German wool industry is expecting orders in larger volume for fall delivery, as the prices of raw material become stabilized, according to C. T. Steger, American Consul at Dresden, Germany. Buyers of raw material have been slow to commit themselves during the past few weeks, having been caught several times with considerable stocks bought at price levels considerably above later quotations.

The industry has been watching the London wool sales very closely and appeared to feel that the low levels reached during the recent sales marked the end of the decline. The slight strengthening lent further color to the situation and orders from German spinners have been more liberal than for some months in the past. In former years German clothing manufacturers paid comparatively little attention to the trend of prices in the raw materials market, since moderate fluctuations were absorbed before they could influence retail prices. At present, however, clothing manufacturers are as watchful of the raw materials market as are the fabric producers, and it is expected that the recent hand to mouth buying policy will enable manufacturers to reflect the low raw material costs in retail prices.

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FRANCE: Number of Livestock in 1924 compared with 1923.

	December 31, 1923	December 31, 1924
	Number	Number
Bulls	248,440	250,080
Steers	1,390,920	1,401,770
Cows	7,303,940	7,431,400
Young cattle 1 year old and above	2,866,100	2,927,840
Calves under 1 year old	1,939,890	2,013,870
Total cattle	13,749,290	14,024,960
Boars	31,760	33,150
Sows	736,980	779,090
Hogs over 6 mos. old	2,009,150	2,126,360
Pigs under 6 mos. old	2,627,950	2,863,230
Total swine	5,405,840	5,801,830
Rams over 1 year old	204,930	204,080
Ewes " " " "	6,115,350	6,256,350
Wethers over 1 year old	1,231,880	1,285,650
Lambs under 1 year old	2,373,050	2,425,440
Total sheep	9,925,310	10,171,520
Goats	1,352,630	1,376,510
Horses	2,847,970	2,859,400
Mules	192,260	192,930
Asses	283,760	279,640

Le Bulletin des Halles, Bourses et Marches May 30, 1925 quoting the Ministry of Agriculture.

ARGENTINE BEEF EXPORTS MAY BE SMALLER

Argentine exports of chilled and frozen beef of January 1 to April 30, 1925 amounted to 1,502,000 quarters and 1,714,000 quarters respectively, according to Brice M. Mace, American Trade Commissioner at Buenos Aires. These figures are in excess of those in any similar period, in spite of the fact that general expectations are that exports this year will be 10 or 15 per cent less than those of 1924.

Last year May and June shipments were very good. This year, however, May and June exports are not expected to equal those of the same months in 1924, and by the end of the first half of 1925 Argentine beef exports are expected to be considerably below those of the 1924 period. As usual practically all of the chilled beef has gone to Great Britain. Belgium, Italy and France in the order named are the leading importers of frozen beef, these three accounting for fully two-thirds of the frozen quarters exported from Argentina so far this year.

GERMANY: Inspected slaughter, first quarter 1913, 1924 and 1925.

Animals slaughtered	First quarter		
	Present boundaries 1913	1924	1925
	Number	Number	Number
Steers	118,927	84,299	111,292
Bulls	104,269	81,921	87,521
Cows	377,778	289,732	349,762
Young cattle	178,296	178,911	203,969
Calves under 3 months	937,517	807,629	1,010,035
Total cattle	1,716,787	1,442,492	1,762,579
Swine	4,010,315	2,363,140	3,042,347
Sheep	427,826	266,388	447,744
Goats	122,611	36,846	55,007
Horses	45,093	26,919	33,376

Deutscher Reichsanzeiger und Preussischer Staatsanzeiger, May 22, 1925.

NEW ZEALAND: Slaughterings, six months November to April 1923-24 and 1924-25

Item	November 1 to April 30	
	1923-24	1924-25
	Number	Number
Lamb carcasses	3,956,702	4,093,145
Mutton carcasses	1,522,576	2,031,924
Beef quarters	181,814	336,309

Cold Storage May 21, 1925 page 178.

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AMERICAN CATTLE FOR MEXICO

A recent sale of 169 head of American cattle to a Mexican rancher is the direct result of insufficient pasture caused by drought in Texas, according to P. H. Foster, American Consul at Monterey, Mexico. Forced sales of Texas cattle at low prices and making possible the reliabilitation of Mexican herds depleted by revolutionary actively.

GRAINS: Exports from the United States, July 1-June 13, 1923-24 and 1924-25
PORK: Exports from the United States, July 1-June 13, 1924-25

Commodity	July 1-June 14 1923-24	July 1-June 13 1924-25 a/	Week ending May 23 1925	Week ending May 30 1925	Week ending June 6 1925	Week ending June 13 1925
GRAINS:	1,000 Bushels	1,000 Bushels	1,000 Bushels	1,000 Bushels	1,000 Bushels	1,000 Bushels
Wheat..........	76,577	190,217	b/ 1,526	b/ 2,559	b/ 1,837	b/ 2,126
Wheat flour.....	c/ 63,284	c/ 55,850	-	-	-	-
Rye............	14,631	47,381	455	703	0	273
Corn...........	20,712	7,714	111	106	200	228
Oats...........	1,096	9,217	365	405	564	476
Barley.........	11,082	21,650	302	1,011	34	531
PORK:		1,000 Pounds	1,000 Pounds	1,000 Pounds	1,000 Pounds	1,000 Pounds
Hams & shoulders inc.Wilt.sides.		264,375	2,777	2,404	3,350	3,671
Bacon inc.Cumberland sides.....		237,408	3,695	3,949	5,064	3,733
Lard...........		753,680	12,929	17,212	15,812	10,762
Pickled pork....		24,712	341	196	184	309

Compiled from official records of the Bureau of Foreign and Domestic Commerce.
a/ Revised to April 30, including exports from all ports.
b/ Including wheat flour via Pacific ports.
c/ July 1-April 30, not reported weekly from Atlantic Coast ports. In terms of bushels of wheat.

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CANADA ATTEMPTS RENEWAL OF LIVESTOCK SHIPMENTS TO GREAT BRITAIN

Canada has shipped 816 head of live cattle to Britol, England during 1925, against 500 head in 1924, according to S. R. Thompson, American Consul at that point. The two consignments sent this year marked another attempt at reviving a trade which was of considerable importance some twenty years ago. Sales of thes cattle were on the whole successful, prices ranging from 21 to 24 cents a pound. Grazing cattle sold readily, but those arriving fat and ready for slaughter were difficult for the market to absorb. It is expected that another shipment will be made sometime this month.

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BUTTER: Prices in London, Copenhagen and New York
(By Weekly Cable)

Market	June 5 1925	June 12 1925	June 19 1925
	Cents per lb.	Cents per lb.	Cents per lb.
Copenhagen, official quotations a/	38.33	38.52	39.08
New York, 92 score........a/	43.00	43.00	42.00
London:			
Danish....................	b/	41.44	41.65
Dutch, unsalted...........	33.84	39.27	40.13
Irish.....................	37.76	38.19	39.26
Irish, unsalted...........	39.06	39.05	40.57
New Zealand...............	37.32	38.84	39.26
New Zealand, unsalted.....	38.84	40.36	40.89
Australian................	35.15	37.10	37.75
Australian, unsalted......	36.46	37.97	39.05
Argentine, unsalted.......	32.55 - 34.72	35.58 - 36.45	34.23 - 37.75
Siberian..................	31.25 - 32.98	32.11 - 34.28	34.28 - 36.01

Quotations converted at exchange of the day.
a/ Thursday price. b/ No quotations due to Danish strikes.

EUROPEAN LIVESTOCK AND MEAT MARKETS
(By Weekly Cable)

Market and Item	Unit	Week ending June 3	 June 10	 June d/ 17
GERMANY:				
Receipts of hogs, 14 markets.	Number	37,906	52,817	42,261
Prices of hogs, Berlin.......	$ per 100 lbs.	15.34	15.94	15.88
Prices of lard, tcs., Hamburg.	"	18.47	19.38	19.36
Prices of margarine, Berlin..	"	13.29	13.29	13.29
UNITED KINGDOM AND IRELAND:				
Hogs, certain markets, England.	Number	8,184	11,204	9,091
Hogs, purchases, Ireland.....	"	17,492	16,442	
Prices at Liverpool:				
American Wiltshires........	$ per 100 lbs.	21.70	21.68	22.13
Canadian "	"	23.76	24.07	24.08
Danish "	"	27.22	27.76	31.02
Imports, Great Britain: a/b/				
Mutton, frozen............	Carcasses	62,055	208,250	
Lamb, "	"	161,424	366,207	
Beef, "	Quarters	103,945	35,660	
Beef, chilled.............	"	83,631	95,457	
DENMARK:				
Exports of bacon a/c/.......	1000 lbs.	3,960		

a/ Received through the Department of Commerce. b/ Week ending Saturday following date indicated. c/ Week ending Friday following date indicated. d/ Not received in time for publication.

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